

Health and the Built Environment

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Overview



- Define the Built Environment
- Relationships between the Built Environment, Climate Change and Public Health
 - Transportation
 - Land use patterns
 - Energy expenditure and methods of generation
 - Sea level rise

Defining the Built Environment



- The built environment includes all aspects of the environment that are modified by humans
 - Homes, schools, workplaces, shopping areas, parks, industrial areas, and highways.

Transportation Choices Influence Both Climate Change and Health

- Increase in impervious surfaces results in water pollution
- Increased VMT results in air pollution
- Increased heat island effects which increases temperatures
- Increasing reliance on automobile leads to decreased levels of physical activity
- Consumption of petroleum-based fuels sources leads to GHG emissions

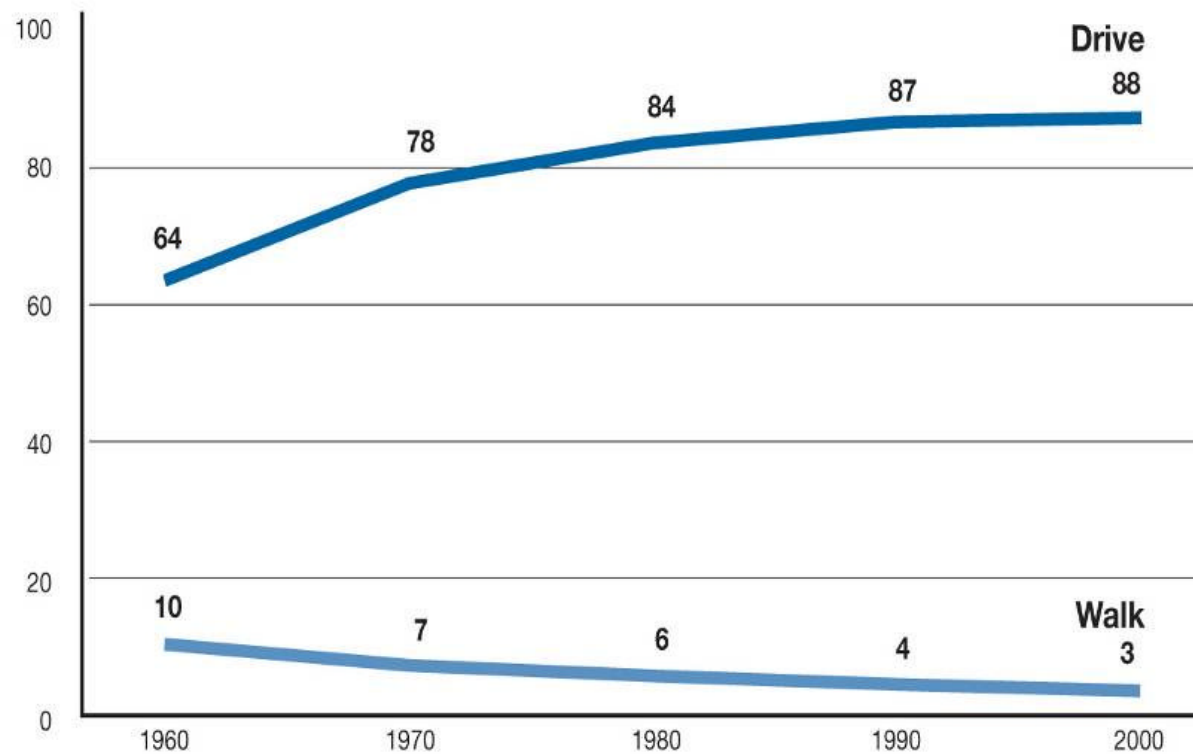


Asthma Rates Associated with the Use of Public Transit: the Atlanta Example

- 1996 Summer Olympics Games in Atlanta, Georgia
- Efforts to decrease traffic resulted in a peak morning traffic decrease of **23%**
- During this time, peak ozone levels decreased **28%**
- Acute asthma events decreased **42%** in the Georgia Medicaid Claims file, **44%** in a health maintenance organization, **11%** in 2 pediatric emergency rooms, and **19%** in the Georgia Hospital Discharge database.
- During the same period, children's emergency visits for causes other than asthma did not change.

Mode of Travels for Commuting to Work (1960-2000)

Figure 2. Commute mode for US workers (percent taking each mode), 1960–2000



Source: US Decennial Census.

URBAN CONNECTIVITY

Neo-Traditional Street Layout vs. Suburban-Style Street Layout

Neo-Traditional
Layout
Provides:

- Adjacency of Land Uses
- Connectivity for All Modes
- Functional Density
- Transportation Choices



Land Use Patterns

- Land use and zoning
 - Mixed Use increases the opportunity for travel by walking, bicycling and transit
 - decreases the amount of green house gas production
 - Sprawling development isolates food markets, fresh produce, retail and recreation areas from residential uses



Relationships Between Changes in Land Use and Climate Change

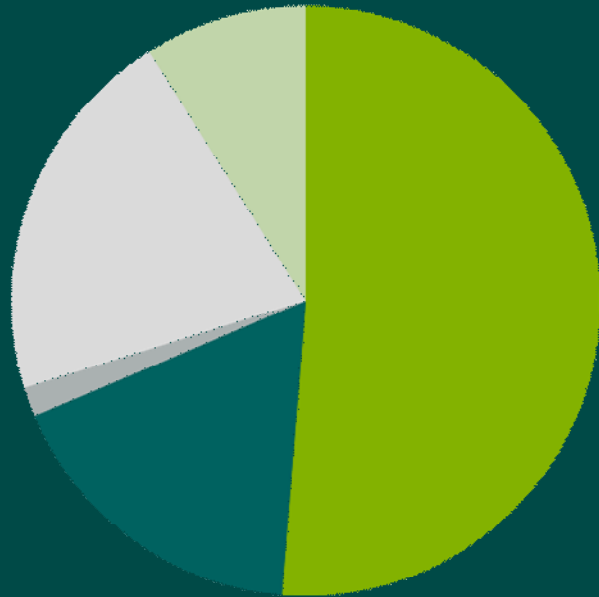
- Deforestation: loss of sequestration of carbon
- Agricultural extension and intensification: air and groundwater pollution
- More impervious surface: heat island effect
- Increase in natural disasters: displacement, access to food, shelter, water and sanitation

Source of Fuel for Electricity – US and FL

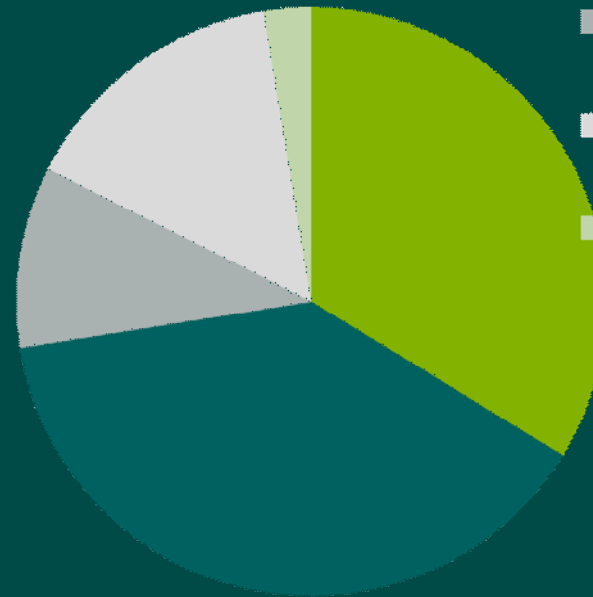
US

FL

- Coal
- Natural Gas
- Other Petroleum
- Nuclear
- Biomass/Hydro



- Coal
- Natural Gas
- Other Petroleum
- Nuclear
- Renewables



Source: US Energy information Agency. 2007.
http://www.eia.doe.gov/emeu/states/sep_use/notes/use_print2007.pdf

Energy Consumption and Land Use

- Energy consumption, driven by sprawling land uses has increased carbon emissions by approximately 30% over pre-industrial revolution
- The broader implications for human health stem from the synergistic effects of land use, climate change and ecosystem function which alters exposure to infectious disease and natural disasters while limiting access to food, clean air and water and raises the likelihood of population displacement

Energy Expenditure and Methods of Generation

- Florida is 3rd largest energy consumer in the nation
- McKinney, Texas has the first green prototype Wal-Mart, with windmills, ponds, and an extensive reuse and recycle system.

--Reported by Paul Shigley, When the Boom Busts, Planning, April 2009

Wal-Mart with Wind Mill Generation



Babcock Ranch, Florida

- 18,000 acres
- 45,000 population
- FPL building 75 megawatt photovoltaic plant
- “A self-contained community”
- Sustainable retail
- Affordable homes

<http://www.time.com/time/nation/article/0,8599,1890308,00.html>



Will Orlando be Affected by Sea Level Rise?



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